Acknowledgement

With the utmost faith in the Omniscient, the Omnipresent and the Omnipotent, I place this record of my research activities in the hands of my learned examiners. I have presented here the best I could and am fully responsible for the minor errors and omissions that might have inadvertently crept in spite of utmost carefulness.

It is indeed a matter of great pleasure for me to express my indebtedness for the bounties I have been the beneficiary of by virtue of being a student of this dream flower of Sir Syed Ahmad Khan. I owe much to my Almamater.

Professor Shafiullah, department of Chemistry, my mentor and guide, has been a great source of knowledge and inspiration to me all along the duration of this work. I thank him for his characteristic willingness in giving me a lot of time from his busy schedule and for his genuine affection towards me.

I am immensely thankful to my co-guide, Professor Samiullah Khan, department of Applied Chemistry, whose scholarly advice and guidance has been the pillar of my strength.

I owe everlasting gratitude to Professor Saeduzzafar, chairman, department of Chemistry and Prof. K.G. Varshney, chairman, department of Applied Chemistry, for their persistent
interest and generous help in providing research facilities. My thanks are also due to ex-chairmen, Prof. Nurul Islam, Prof. M. Ilyas, Prof. K.M. Shamsuddin, Prof. M. Ajmal and Prof. H.S. Rathor for providing research and laboratory facilities during their respective periods.

With fond memory, I remember Late Prof. M. Shahabuddin Ahmad for enlightening me with his sound advice and suggestions.

I would like to thank Prof. M. Mushfiq and Dr. Shamshuzzaman for their valuable suggestions. I also want to express my gratitude to all teachers and research scholars of the department of Chemistry and Applied Chemistry for extending full cooperation and encouragement during my research studies.

I sincerely acknowledge with thanks the valuable suggestions of my seniors Dr. Rao Owais A. Khan, Dr. Jamal Firoz, Dr. Afreen Shamim and Mrs. Sheeba. My appreciation is also due to my lab colleagues Mr. Salman, Mr. Rakesh, Dr. Ehtesham, Mrs. Sheeba Shafi, Ms. Rakshanda, Ms. Shagufta, Ms. Nazish, Mr. Aftab and Mr. Mehboob.

I wish to express my heartfelt and sincere thanks to Dr. Sohrab Khan, Dr. Shafiullah and Mr. Rakesh.

I am particularly indebted to my friends Dr. Mohd. Asif Musharras and Mr. Mohd. Akram Khan and hostel fellows Mr.
Badruzzaman, Mr. Feroz Haider, Advocate and Mr. Rashid A. Javid for their continued moral support, help and encouragement throughout this study.

As a special gesture of my deep appreciation and regard for my Appi, Dr. Tahira Khan, I extend my thanks to her for her affectionate behavior and encouragement at all levels during this study.

I shall be remise in moral duties if I do not express my feelings of gratitude for the multifarious contributions of my uncle, Mr. Mahmoodur Rehman, and aunty, Jameela, towards supporting me in facing many odds during the whole of the tenure of my study. My gratefulness is also due to Dr. A.H. Ansari and Dr. Aleem Khan for their suggestions.

The painstaking job of typing by Mr. Arif Jamal Siddiqui and Mr. Abid Jamal Siddiqui is highly appreciated.

In the last, but not certainly the least, I feel immense pleasure in expressing the deepest gratitude to my parents and other family members for their everlasting moral support, affection and patience without which it would have been impossible for me to accomplish the arduous task of completing this thesis.

(Jamal Ahmad Khan)